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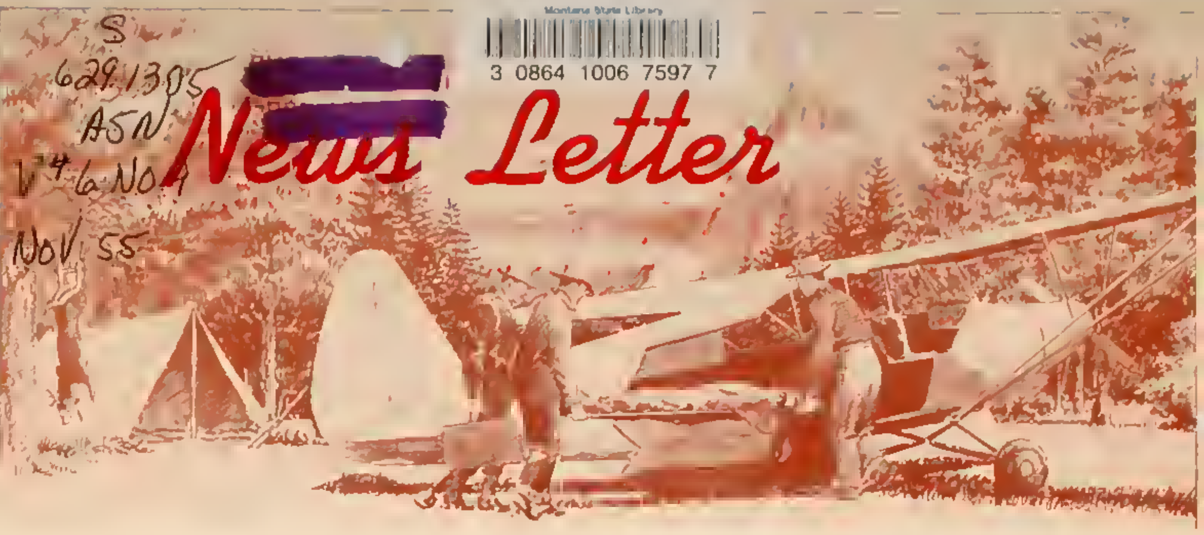
News Letter



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ANNUAL MONTANA AVIATION WEEK

Aviation is developing at a rapid rate in Montana with the airplane recognized as an indispensable instrument in our economy. Groups have been organized to sponsor interests of the various types of flying activities. The administration of each of these groups is depended upon the support of the membership of each group.

Aviation groups or organizations with membership in Montana include the following: The Montana Pilots Association; The Montana Aviation Trades Association; The Montana Flying Farmers and Ranchers Association; The Civil Air Patrol; The 99's, a women pilots organization; The International Northwest Aviation Council; The Airplane Owners and Pilots Association; The Flying Physicians Association; The Airline Pilots Association; The Air Force Association; The QB (Quiet Birdmen) Association; The Air National Guard; The Air Force Reserve; The Navy Air Reserve; and the U. S. Air Force.

Many of these groups have annual state meetings scheduled at various times during the year and many pilots in Montana belong to more than one group. These annual meetings are for the purpose of conducting the administrative function of the organization with the election of officers; taking official action on projects of immediate interest to the group; becoming better informed on and promotion of aviation; to have a good social program with an opportunity to visit with friends who belong to the same organization. All of these groups have a common interest in aviation with a desire to develop and promote their activity in aviation in Montana.

Pilots who belong to two or more of these groups each year are confronted with the decision of which aviation meeting they can afford the time and money to attend.

The Aviation Council of representatives of several groups is an example of a common interest of aviation groups to work together on aviation programs. It is suggested that all aviation groups in Montana give consideration to sponsoring together an official Annual Montano Aviation Convention and an Annual Montana Aviation Week during which a convention of all aviation groups will be scheduled at a designated town in Montana. The annual aviation convention would include an agenda with consecutive scheduled annual meetings of the attending aviation organizations together with a joint aviation program sponsored by all participating organizations.

It is suggested that the first Annual Montana Aviation Week be scheduled for October 1957. This would give the convention committee an opportunity to plan a program with the scheduling of national speakers on aviation and sponsored exhibits of aviation products. By scheduling the first Annual Aviation Convention for 1957 aviation people may plan ahead with official action by their aviation group to schedule their 1957 annual meeting at the time and place designated by the committee.

If you think this is a good idea it is suggested that your aviation group take action as a sponsor of this program to appoint a representative who will be a member of the standing committee for the 1957 aviation week and Montana aviation convention.

FOG FORMS WHEN TEMPERATURE AND DEW POINT MEET!

Fog has been defined as a cloud on the ground. It usually forms at night as a result of the air being cooled by the colder ground. It also forms when surface winds carry moist air over colder ground, or when rain falls into colder air.

GROUND FOG forms in nocturnally cooled surface air, usually appearing first in depressions and valleys as isolated patches. These patches combine to form a layer which deepens until approximately an hour after sunrise.

ADVECTION FOG forms as a result of warm moist air drifting over cold ground or snow, usually in winter time or early spring. It forms rapidly and covers extensive areas.

PRECIPITATION FOG results when warm rain falls into a layer of cooler air. This fog is frequently preceded by broken low scud, or low stratus which thickens to the ground.

DO's AND DON'Ts

DO check the dew point and temperature spread (difference) at your destination and along your course. A difference of just a few degrees and winds below 10 MPH indicate the possibility of fog.

DON'T plan a night flight where arrival will be sunrise or shortly thereafter. If fog is present on arrival, don't waste gas circling the airport waiting for it to clear. Go to your alternate, which should have been selected prior to starting the flight.

REMEMBER . . . . Airports in valleys will fog in first, those on hills or high ground last. Minn. Dept. of Aeronautics.

WINTER WEATHER

Have you had your aircraft checked by an A & E for winter operation? Now is the time. Just a word about carburetor heat—again we reiterate—carburetor ice has "cooled off" many hot pilots . . . Wyo. Aero News.

PILOT REGISTRATION

The regulations of the Montana Aeronautics Commission and the laws of Montana require that all aircraft pilots register their CAA pilot certificate annually with the office of the commission.

Your attention is invited to the enclosed pilot registration form for the year 1956 and it may be noted that your current pilot registration certificate expires December 31st, 1955.

The piloting of an airplane in Montana without having your pilot certificate registered currently with this office is a violation of the laws of Montana and subject to court action as a misdemeanor with a maximum penalty of $500 fine or imprisonment of not more than 90 days or both.

A one dollar pilot registration fee is required and the Montana Aeronautics Commission budgets annually an amount equal to receipts from pilot registration for search and rescue operations.

The newsletter published by the commission is mailed to all currently registered pilots at no cost.

A GOOD RULE OF THUMB

In 1860, a Dutch scientist named Buys Ballot devised a pretty good rule of thumb on the weather: "Stand with your back to the wind and pressure is lower on your left hand than on your right, in the northern hemisphere." In flying this can be converted to. "If you have a **right** drift, you are heading toward deteriorating weather conditions. If you drift **left**, weather conditions should improve." Weather conditions can change rapidly, a trend can reverse itself or a frontal movement can stabilize, but in general this rule of thumb is something to be relied upon.

BEECH SAFETY PROGRAM

Presentation of the first Annual Business Flight Safety Award last week to John P. Gaty, v.p. and general mgr. of Beech Aircraft Corp., recognized a 20-year campaign for greater safety in the air which has resulted in more than 20,000 pilots of all types of aircraft regularly receiving detailed weather and safety information not previously available.

Gaty was the unanimous selection of a special awards committee named by National Business Aircraft Association. The committee found that Beech has invested about $100,000 since the war in its Safety Suggestion program which resulted in publication of detailed technical analyses of weather and its effect on flying.

Beech has made about 330,000 direct mailings of its free safety literature. In addition to pilots, the studies have been utilized by federal government agencies, flight safety groups, universities and foreign governments. The studies cover a wide range of weather problems, including thunderstorms, kinetic energy, standing waves and turbulence. The award was established by the Women's Aeronautical Association of Kansas and is administered by NBAA. Am. Avn. Daily.

FLYING PHYSICIANS TO MEET IN CHICAGO

Chicago will be the place. Oct. 31 through Nov. 4th will be the dates and the American College of Surgeons will hold forth in Chicago. The only reason this belongs in the aviation paper, is the Flying Physicians Association members will fly into the Windy City and attend as a group.

Dr. H. D. Vickers, M.D., President of the FPA's announced the Fly-In and allowed as how the group was not to be classed as a social or fraternal flying society. The Flying Physicians are men who fly their own planes, personal pilots all, but have in mind the formation of a disaster effort within the framework of a civilian defense mobilization program as well as standardize the legitimate costs of the use of airplanes in professional service.

There are over 700 known physician pilots in the USA today and they are greatly concerned with promoting aviation safety and aviation consciousness in youth, Dr. Vickers said.

A membership requirement is the ability to do a 180° turn on instrument and a pledge to not fly in weather for which the airplane or pilot is not certificated or qualified.

Physician pilots may inquire about membership by writing to the area chairman, Dr. Harvey Casebeer, 10 South Idaho Street, Butte, Montana.

CERTIFICATE EXCHANGE

The CAA has announced that pilot certificates are being divided into two classes, active and inactive. Persons holding the large size pilot certificates, other than students, are asked to exchange them for the smaller "billfold" certificates. No examination is required, and pilots need only to complete standard application blanks and present their log books and current medical certificate to an aviation safety agent.

The exchange of certificates is also offered to mechanics, ground instructors, parachute riggers, aircraft dispatchers and all others holding old style CAA certificates.

It is suggested that should you have any questions concerning the above that you contact your CAA safety agent in Billings or Helena.

NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

PURPOSE:—"To foster aviation as an industry, as a mode of transportation for persons and property and as an arm of the national defense; to join with the Federal Government and other groups in research, development, and advancement of aviation; to develop uniform aviation laws and regulations; and to otherwise encourage co-operation and mutual aid among the several states."

THE LOW DOWN ON HIGH UP

During recent years attention has been focused on the structure of the higher atmosphere particularly in connection with problems posed by developments in new types of highflying aircraft, rockets and missiles. Many agencies are currently extending our knowledge and contributing greatly to the scientific fund of research in order to explain climatic processes. The applied climatologist must analyze and interpret many climatic factors that enter into problems of design, specification, planning, location and operation.

In connection with the upper stratosphere and lower stratosphere, roughly at heights above ten miles, the climatologist is often asked: "Where do you get your information?" Upon what are the records based? How do you know that such a phenomenon occurs at this height?" Suppose we answer these questions by taking an imaginary trip up through atmosphere; with a self-imposed ceiling for the ascent being placed at about 40 miles.

Research into the upper atmosphere has moved fast since World War II. Scientists using high altitude rockets have made remarkable progress. Unexpected associations, some still unexplained, have been found to exist between physical conditions in the upper atmosphere and weather conditions in the tropospheric region. The lower Atmosphere or troposphere exists between ground level and the tropopause, which is the boundary or zone of transition between troposphere and stratosphere. The troposphere varies in height, depending on the latitude, from about four miles at high latitudes to 11 miles at the Equator.

The stratosphere designates the atmospheric region lying between the tropospause and the upper boundary known as the stratopause. During the ascent on our imaginary flight after reaching the stratopause level, the temperature first begins to increase at a more rapid rate than is characteristic of the lower stratosphere. The level of the stratospause varies between 22 and 31 miles, according to the latitude and time of year.

Unmanned balloons can function at great altitudes, up to 25 miles if carrying only very light instruments, but presently they reach a level where the surrounding air is of the same desity as the hydrogen in the envelope, and so they lose their buoyancy.

Rockets and guided missile research, as well as high altitude aircraft, provide valuable experimental techniques. The first man to enter the stratosphere for certain, and to survive, was the Swiss physicist, Piccard, who ascended to ten miles in 1931. The last great ascent was by the American helium-filled Explorer II in 1938 where a record height of 14 miles was reached. The greates height yet reached by an unmanned rocket is reported to be 250 miles.

As we ascent from the earth's surface the pressure and density of the air fall steadily. At ten miles, near the base of the stratosphere, the atmospheric density is about 1/10 of that at sea level. Atmospheric tenuity does not merely affect men but also machines. There is a limit to the height at which reciprocating engine aircraft can even operate. That limit is between 10 and 15 miles or, roughly speaking, where the air pressure is about 1/20 of its sea-level value. Fortunately our rocket-powered craft is not so affected and we continue on.

As we journey into the upper atmosphere some stratospheric clouds are observed. These mother-of-pearl or nacreous clouds, as they are called, generally appear at the 14 to 19-mile level. This seems to indicate a region of cooling at the top of the stratosphere. By analogy with clouds in the troposhere, it is usually assumed that they consist of water droplets of ice particles. The total range of cloud height is remarkably small, being little more than twice the average thickness of the clouds, between 1.2 and 1.9 miles.

The temperature distribution in the troposphere and the lower stratospheric region is now well known from direct observations with the help of sounding balloons and smoke shells. Available values for upper atmosphere temperatures are derived from a study of radiosonde data, the absorption of solar radiation by ozone, irregularities in the propagation of sound, luminosity and speed of meteors, atmospheric tides, the auroral spectrum and the reflections by radio.

In recent years the vertical temperature structure up to 12 miles had been extensively explored by radiosonde. Since World War II, soundings up to 19 miles have been experienced very frequently.

Starting with an average surface temperature of 20°C, the atmosphere becomes colder with increasing altitude until in the region which divides the troposphere and the stratosphere a temperature of -[illegible] C. is found. As the ascent continues through the stratosphere the temperature remains nearly constant until at a height of above 19 miles where it starts to increase and reach a maximum of over 85° C. at about 36 miles.

Research has shown that there is a definite increase of temperature with height between 19 and 36 miles, with maximum temperatures approximately equal to those at ground level. The rise in the middle atmosphere between 20 and 34 miles is caused by absorption of solar radiation by ozone. Observation on the abnormal propagation of sound waves and study of the heights of appearance and disappearance of meteor flashes confirm this.

A small amount of ozone spread in a very diffuse layer between 12 and 31 miles above the surface of the earth and with its maximum concentration at about 16 miles, protects life on the earth from extinction by solar ulta-violet radiation. Ozone becomes warmer when solar ultraviolet radiation is absorbed, in fact, the ozone layer acts somewhat like an enormous heat reservoir accounting for the temperature maximum at a height of about 36 miles.

Aircraft flying in the stratosphere sometimes encounter localized patches of bumpiness. The explanation of this problem is difficult. Large atmospheric eddies take a very long time to weaken. The release of potential energy and the observed turbulent energy may be well separated in space and time. Irregular wind components can be looked upon as manifestations of alrge-scale turbulence, which is indicated by most of the stratospheric wind observations. However, knowledge of turbulence in the stratosphere is very rudimentary at present.

Above ten miles there is a distinct monsoonal effect over North America with a strong reversal of direction from summer to winter. Winds are predominantly from the east during the summer and from the west during the winter months.

Generally an increase in windspeed can be expected with altitude until the stratosphere is entered, at which point velocities will decrease. At a height of about 12 miles, another increase will occur and average windspeeds of about 130 knots can be expected. During winter windspeeds increase with increasing latitude while during the summer they decrease with increasing latitude.

Jet streams appear as tongues or narrow bands of high speed westerlies, they are meandering belts or "rivers" of fast moving winds passing between much slower winds on both sides. These belts are most intense at elevations of six to seven miles (30,000 to 35,000 feet). Mean charts show jet streams with speeds of about 100 knots circling the globe between 20 degrees and 30 degrees N. latitude in winter, in summer, a speed of about [illegible] knots is found between 3[illegible] degrees and 50 degrees N. latitude. This concentrated high wind system has been studied in detail by researchers at the University of Chicago, who coined the descriptive term "jet stream".

Well, this little excursion into the upper regions was over almost before it started and there wasn't a great deal to see. But one of these days we'll get out of the imaginary rocket class and into reality. Then our knowhow will increase by leaps and bounds.—USAF Flying Safety Magazine

WINTERIZATION

Preflight

1. Frost, snow, frozen ice particles or just ice on top of wings and stablizers, underneath wings or center section means trouble. Periodically someone disregards it. Don't!
2. Condition of prop deicer boots more important—give that second look.
3. Plugged ram air intakes, a seasonal hazard.

Starting Engines

1. That never-fail summer starting procedure must be modified, particularly on that first start in the morning.
2. Watch those minimum temperature requirements.

Taxiing.

1. Nosewheel not effective on wet icy ramps, except at s-l-o-w speeds.

Runup-Pre-takeoff.

1. Watch minimum temperatures.
2. Get airfoil warmed up if conditions dictate.
3. Have navigation aids set up for quick return to field if necessary.
4. Run props through if it's real cold.

Takeoff and Climb:

1. Pilot heaters on where conditions dictate.
2. Keep enough heat on for a clear windshield.
3. Check airspeeds and horizons against each other on minimum ceiling, minimum visibility takeoffs. That ball-bank and directional indicator will tell you first if a horizon is lying.

Cruise.

1. Don't crowd the centerline of the airway—that's where traffic is heaviest.
2. If weather ahead is bad—review plan of action. Have everything organized before things start to happen fast.

Descent.

1. Take precautions against windshield fogging on the way down.
2. Have deicing equipment going and everything all warmed up before starting descent through cloud.
3. When throttle openings are reduced, exposure to carburetor ice goes up fast. Lower power descents in clouds and precipitation should always be made with carburetor heat on.

Landing.

1. Having flown through icing conditions, consider effect on airfoils and carry a little speed margin for unpredicted stall speeds.
2. Wet or icy runways must be longer than dry runways.
3. Too much water or slush can bang up your airplane.

Parking

1. Approach ramps with caution. Brakes are not much help on slippery pavements.

AIRMAN'S GUIDE

A new section has been added to the Airman's Guide. It is entitled "Attention Pilots" and covers a list of recent obstructions, television towers, smoke stacks, etc., which are 500 feet above the ground. The Guide suggests that pilots check this list and mark their aeronautical charts accordingly, then be sure to refer to it before any cross-country flight.

CAA SAFETY AGENTS

Billings—5, 12, 19
Bozeman—22
Butte—21
Cut Bank—7
Glasgow—7
Glendive—14
Great Falls—8
Helena—5, 12, 19, 27
Miles City—15
Missoula—29
Red Lodge—21
Wolf Point—8

According to a recent survey of CAA tower and communication station personnel the Able, Baker, Charlie alphabet is the best.

Over 88% were for the Able, Baker, etc., form. Over 70% had personal experiences in which the ICAO alphabet increased the hazard of misunderstanding rather than decreased it.

FOR SALE

1946 Taylorcraft Model BC 12 D, 65 Cont. License is up in Jan. 1956. Write Vern A. Hanson, 414 3rd Ave. So., Wolf Point, Montana.

1948 Stinson 165 Station Wagon, McCauley prop, good tires, Hydraulic skis, low frequency radio, price with skis $13,000. Will sell without skis. Write Jim Brophy, Red Lodge, Montana.

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